LIFE HISTORY OF *PRECIS HEDONIA ZELIMA* (FABRICIUS) (LEPIDOPTERA: NYMPHALIDAE)

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The early stages of this species have previously eluded collectors, probably because the species is extremely local and few adults will be seen more than a couple of hundred meters from where a large colony is breeding.

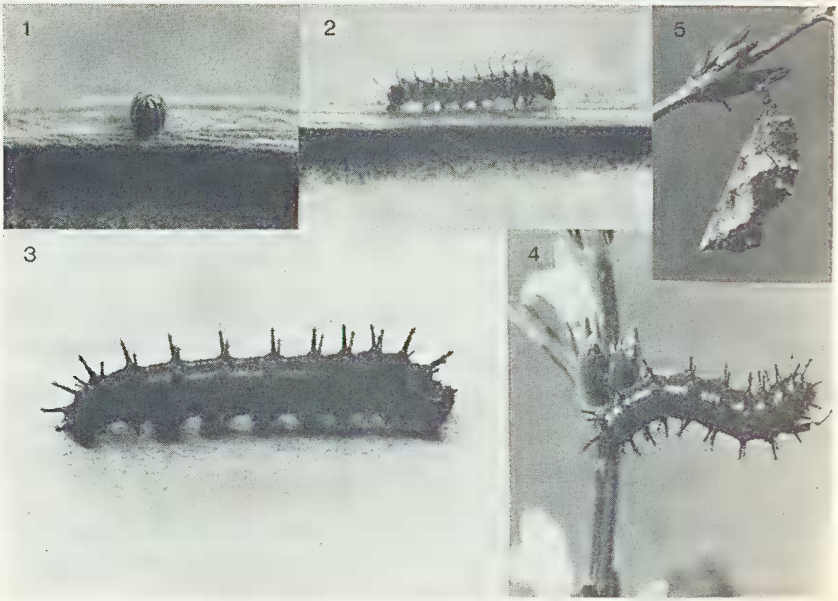
The following life history record was described from eggs, larvae and pupae collected in the Bundaberg district, Queensland, by the author between 16th and 31st December, 1972.

Egg (Fig. 1). Domed, flat on top; height slightly greater than diameter; green with 16-18 vertical ribs.

Larva (Figs 2-4). First instar larva (Fig. 2) greenish with simple hair-like spines, bent forward near the top. Second instar and onwards (Figs 3 & 4), black with numerous black branched spines in seven rows. Two short spines just above each leg, except anal prolegs. Head black, hairy, with two very short branched spines.

Pupa (Fig. 5). Grey, mottled with black; 16 short spines on abdomen and blunt point on thorax; two blunt horns on head. Pupae are usually found attached to reeds and grass near the food plant.

Food Plant. The larvae feed on *Hygrophila salicifolia* Nees. (Acanthaceae) a small herbaceous plant which grows in swamps and gullies in the



flat country near the coast, usually amongst paper bark trees. The plant is found mostly north of Maryborough, Queensland.

The author has also found larvae of *Precis orithya ablicincta* (Butler) on the same plant along with *P. hedonia zelima,* though never in large numbers.

Acknowledgement

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BOOK REVIEW

Artificial diets for insects: a compilation of references with abstracts (1970-72) by Pritam Singh. 1974. New Zealand Department of Scientific and Industrial Research Bulletin 214. 96 pages, 30 x 21 cm. Price: N.Z. $2.00. Available from D.S.I.R., Wellington, N.Z.

Dr Singh is to be commended for compiling this recipe book of artificial diets for insects developed since May 1970. His introductory comment that this bulletin can be regarded as a continuation of two previous bulletins places this work in perspective. His clear description of the terminology which has often been abused in the past is very refreshing.

The abstracts include a list of the components of each diet, where possible a summary of preparation, the use for which the diet was designed and the development time of the insect on the diet. He has given recipes for diets suitable for a very wide range of insects, and also for some mites.

Artificial diets are virtually essential for mass rearing insects and mites for a wide range of purposes, including production of insect viruses, pheromone studies, toxicological work and rearing insect parasites or predators. A list of diets that have been developed, together with a detailed reference list is therefore of the utmost importance.

The abstracts are organised into orders and families; genera are arranged alphabetically within families. Where there are several diets for one species, the diets are listed chronologically. Although it is obvious from the type of ingredients required, the diets have not been separated into totally defined diets and diets including crude organic materials.

Dr Singh has provided three appendices. Appendix 1 is a list of general reviews of insect diets and insect nutrition. Appendix 2 is a list of references on the effect of antimicrobial food additives. The use and importance of these in artificial diets is now being realised. Appendix 3 details the composition of various salt and vitamin mixtures commonly used in insect diets and which were referred to in the abstracts.

The main features of this bulletin are the very wide range of diets given, and the detail in which they are given. Diets suitable for 8 orders (including Acarina) and over 40 families of insects and mites, together with details of references and, in most cases, preparation techniques are described. Because of a general increase in research on biology, toxicology, insecticide resistance, nutrition and biological control agents, a detailed, comprehensive list of available insect diets for a wide range of insects is invaluable.

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